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**SIEMENS****FACSIMILE COVER SHEET**In the UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: William A. Perry Jr

Application No. 09/712,017

Filed: 11/14/2000

Title: METHOD AND APPARATUS FOR AUTOMATED ASSISTANCE IN CONFIGURING  
CUSTOMER PREMISES EQUIPMENT

Examiner: JOSEPH E. AVELLINO

Art Unit: 2143

➔ **FACSIMILE ATTN TO: JOSEPH AVELLINO****FAX NO.: 571-273-8300****APPELLANT'S BRIEF**Commissioner for Patents  
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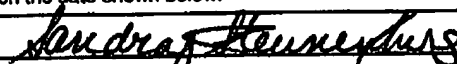
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		First Named Inventor	William A. Perry Jr.
		Art Unit	2143
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**SIEMENS**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Inventor(s):	William A. Perry Jr. et al.	)		
		)	Group Art Unit:	2143
Serial No.:	09/712,017	)		
		)	Examiner:	Avellino, Joseph E.
Filed:	November 14, 2000	)		

Title: METHOD AND APPARATUS FOR AUTOMATED ASSISTANCE IN  
CONFIGURING CUSTOMER PREMISES EQUIPMENT

Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**APPELLANTS BRIEF**

This Appeal Brief relates to an appeal from the final rejection of claims 5-14, 16-18, 21-26, 31-33, 35-41, 61, 68, 69, and 71-79 in the Office Action mailed November 16, 2005.

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Real Party In Interest

This application is assigned to Efficient Networks, Inc. of Dallas, Texas. Efficient Networks is a wholly owned subsidiary of Siemens Corporation of Iselin, New Jersey.

Related Appeals and Interferences

There are no prior and pending appeals, interferences or judicial proceedings known to Applicants, Applicants' legal representative, or Assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims

Claims 5-14, 16-18, 21-26, 31-33, 35-41, 61, 68, 69, and 71-79 stand rejected by the Office Action mailed November 16, 2005 and are presently under appeal in this proceeding. No other claims stand rejected, allowed, withdrawn, objected to, or canceled.

Status of Amendments

No amendment has been filed subsequent to the final rejection.

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Summary of Claimed Subject Matter

Independent Claim 5

Referring to Figures 1, 2, 3, and 4a independent claim 5 recites a method of providing automated assistance in configuring customer premises equipment 20, 120, 220 for communication with another network element, comprising:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment 20, 120, 220 (see e.g., page 4 lines 10-15) without prompting a user for information that directly or indirectly identifies the at least one of the valid virtual channel and the valid protocol (see e.g., page 5 lines 14-17), the valid virtual channel being a communications link (see e.g. page 2 line 9); and

assisting the user in configuring the customer premises equipment 20, 120, 220 for use with the identified at least one of the valid virtual channel and the valid protocol (see e.g., page 4 lines 15-17;

wherein automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment 20, 120, 220 comprises:

communicating over a virtual channel and toward a destination network element a probing configuration signal 112 the virtual channel being a communication link (see e.g., page 4 lines 31-33) ;

receiving over the virtual channel a response to the configuration signal 112 (see e.g., page 4 line 33 – page 5 line 3); and

identifying as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response (see e.g., page 17 lines 17-20);

wherein communicating the probing configuration signal 112 comprises communicating a plurality of probing configuration signals 310, each signal associated with a different of the at least one of the valid virtual channel and the valid protocol (page 26 lines 16-20).

Dependent Claim 6

Referring to Figures 2 and 4a, dependent claim 6 recites the method of Claim 5, wherein the probing configuration signal 112 comprises an F5 Operations, Administration, and Maintenance loopback signal 312 (see e.g., page 12 lines 27-29).

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Dependent Claim 7

Referring to Figure 2, dependent claim 7 recites the method of Claim 5, wherein the probing configuration signal 112 comprises a signal having a self configuring protocol (see e.g., page 13 lines 1-2).

Dependent Claim 8

Referring to Figures 2 and 4a, dependent claim 8 recites the method of Claim 7, wherein the probing configuration signal 112 comprises a Dynamic Host Configuration Protocol request 316 (see e.g., page 13 line 3), a Link Control Protocol Configuration Packet 318 (see e.g., page 13 line 4), or a Point-to-Point Over Ethernet (PPOE) PADI packet 314 (see e.g., page 18 lines 30-32).

Dependent Claim 9

Referring to Figures 2 and 4a, dependent claim 9 recites the method of Claim 8, wherein the valid protocol comprises an Internet over ATM protocol. (see e.g., page 11 lines 3-6)

Dependent Claim 10

Referring to Figure 2, dependent claim 10 recites the method of Claim 8, wherein the valid protocol comprises a Point-to-Point over Asynchronous Transfer Mode protocol (see e.g., page 19 lines 28-30) or a Point-to-Point over Ethernet protocol (see e.g., page 18 lines 31-33).

Dependent Claim 11

Referring to Figures 2, dependent claim 11 recites the method of Claim 5, wherein communicating the probing configuration signal 112 comprises communicating the probing configuration signal 112 over a plurality of virtual channels (see e.g., page 12 lines 24-26).

Dependent Claim 12

Referring to Figure 2, dependent claim 12 recites the method of Claim 11, wherein communicating the probing configuration signal 112 over a plurality of virtual channels comprises communicating the signal over a first plurality of virtual channels that are likely to return a response (see e.g., page 23 lines 23-30).

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Dependent Claim 13

Referring to Figure 2, dependent claim 13 recites the method of Claim 5, wherein communicating the probing configuration signal 112 comprises:

communicating the signal 112 over a first virtual channel (see e.g., page 25 lines 32-34);

and

communicating the signal 112 over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires (see e.g., page 26 line 29 - page 27 line 5).

Dependent Claim 14

Referring to Figure 2, dependent claim 14 recites the method of Claim 5, wherein communicating the probing configuration signal 112 comprises:

communicating a first probing communication signal 112 over a virtual channel (see e.g., page 25 lines 32-34); and

communicating a second probing configuration signal 112 over the same virtual channel before a time out value associated with the first probing configuration signal expires (see e.g., page 26 lines 1-4).

Dependent Claim 16

Referring to Figures 2 and 4a, dependent claim 16 recites the method of Claim 5, wherein communicating the probing configuration signal 112 comprises communicating a plurality of probing configuration signals 310 approximately simultaneously (see e.g., page 26 lines 31-34).

Dependent Claim 17

Referring to Figure 4a, dependent claim 17 recites the method of Claim 16, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises:

spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel (see e.g., page 25 lines 5-7);

communicating a probing configuration signal 112, 310 over a plurality of virtual channels (see e.g., page 26 lines 31-34); and



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monitoring the probing configuration signal 112, 310 associated with each virtual channel using a separate thread (see e.g., page 5 line 32 – page 6 line 2).

Dependent Claim 18

Referring to Figure 4a, dependent claim 18 recites the method of Claim 16, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises communicating a plurality of probing signals 310 approximately back-to-back over at least one virtual channel (see e.g., page 6 lines 9-14).

Independent Claim 21

Referring to Figures 2 and 4a, dependent claim 21 recites a method of providing automated assistance in configuring customer premises equipment 20, 120, 220 for communication with another network element, comprising:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment 20, 120, 220 by communicating a first diagnostic signal associated with a first of a plurality of valid virtual channels and the valid protocols toward a destination network element, the valid virtual channel being a communication link; and

determining connectivity of a network layer based on whether a response to the diagnostic signal is received; and  
when a response is not received, communicating a second diagnostic signal associated with a second of the plurality of virtual channels and protocols, the virtual channel being a communication link.

Dependent Claim 22

Referring to Figures 2 and 4b dependent claim 22 recites the method of Claim 21, wherein the diagnostic signal comprises 114 a Protocol Internet Groper (“PING”) signal 332 operable to test an Internet Protocol layer of the network (see e.g., page 21 lines 19-31).

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Dependent Claim 23

Referring to Figures 2 and 4b, dependent claim 23 recites the method of Claim 21, wherein the diagnostic signal comprises 116 a domain name server resolution request signal 324 operable to test a Transmission Protocol layer of the network, the Transmission Protocol layer is a Transmission Control Protocol (see e.g., page 21 line 32– page 22 line 6).

Dependent Claim 24

Referring to Figures 2 and 4b, dependent claim 24 recites the method of Claim 21, wherein the diagnostic signal comprises 118 a Hypertext Transmission Protocol request signal 326 operable to test an Application layer of the network (see e.g., page 22 lines 7-15).

Dependent Claim 25

Referring to Figure 2, dependent claim 25 recites the method of Claim 21, further comprising reporting on the connectivity of a network layer based on whether a response to the diagnostic signal 114, 116,, 118 is received (see e.g., page 22 lines 10-15).

Dependent Claim 26

Referring to Figures 1, 2, and 3, dependent claim 26 recites the method of Claim 21, wherein the customer premises equipment 20, 120, 220 comprises a modem 24 (see e.g., page 9 lines 1-9).

Independent Claim 31

Referring to Figures 1, 2, and 3, independent claim 31 recites A computer readable medium operable to execute the following steps on a processor of a computer:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment 20, 120, 220 by (see e.g., page 4 lines 10-15)

communicating over a plurality of virtual channels and toward a destination network element a probing configuration signal (see e.g., page 4 lines 31-33), the virtual channel being a communication link (see e.g., page 2 line 9);

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receiving over a valid virtual channel a response to the configuration signal, the valid virtual channel being a communication link (see e.g., page 4 lines 33- page 5 line 1); and identifying as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response (see e.g., page 5 lines 1-4).

Dependent Claim 32

Referring to figures 2 and 4a, dependent claim 32 recites the computer readable medium of Claim 31, wherein the probing configuration signal 112 comprises an F5 Operations, Administration, and Maintenance loopback signal 312 (see e.g., page 12 lines 27-29).

Dependent Claim 33

Referring to Figure 2, dependent claim 33 recites the computer readable medium of Claim 31, wherein the probing configuration signal 112 comprises a signal having a self configuring protocol (see e.g., page 13-lines 1-2).

Dependent Claim 35

Referring to Figure 2, dependent claim 35 recites the computer readable medium of Claim 31, wherein communicating the probing configuration signal 112 over a plurality of virtual channels comprises communicating the signal over plurality of virtual channels likely to return a response (see e.g., page 23 lines 23-30).

Dependent Claim 36

Referring to Figure 2, dependent claim 36 recites the computer readable medium of Claim 31, wherein communicating the probing configuration signal 112 comprises:  
communicating the signal over a first virtual channel (see e.g., page 15 lines 32-34); and  
communicating the signal over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires (see e.g., page 26 lines 29 page 27 line 5).

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Dependent Claim 37

Referring to Figure 2, dependent claim 37 recites computer readable medium of Claim 31, wherein communicating the probing configuration signal 112 comprises:

communicating a first probing communication signal over a virtual channel (see e.g., page 15 lines 32-34); and

communicating a second probing configuration signal over the same virtual channel before a time out value associated with the first probing configuration signal expires (see e.g., page 26 lines 1-4).

Dependent Claim 38

Referring to Figures 2 and 4a, dependent claim 38 recites the computer readable medium of Claim 31, wherein communicating the probing configuration signal 112 comprises communicating over a virtual channel a plurality of probing configuration signals 310, each signal associated with a different protocol (page 26 lines 16-20).

Dependent Claim 39

Referring to Figures 2 and 4a, dependent claim 39 recites the computer readable medium of Claim 31, wherein communicating the probing configuration signal 112 comprises communicating a plurality of probing configuration signals 310 approximately simultaneously (see e.g., page 26 lines 31-34)

Dependent Claim 40

Referring to Figure 4a, dependent claim 40 recites the computer readable medium of Claim 40, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises:

spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel (see e.g., page 25 lines 5-7);

communicating a probing configuration signal over a plurality of virtual channels (see e.g., page 26 lines 31-34); and

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monitoring the probing configuration signal associated with each virtual channel using a separate thread (see e.g., page 5 line 32 – page 6 line 2).

#### Dependent Claim 41

Referring to Figure 4a, dependent claim 41 recites the computer readable medium of Claim 41, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises communicating a plurality of probing signals approximately 310 back-to-back over at least one virtual channel (see e.g., page 6 lines 9-14).

#### Independent Claim 61

Referring to Figures 1, 2, and 3, independent claim 61 recites an apparatus operable to provide automated assistance in configuring customer premises equipment 20, 120, 220, the apparatus comprising:

a configuration manager 122, 222 operable to automatically identify at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment 20, 120, 220 (see e.g., page 25 lines 32 – 34) without prompting a user for information that directly or indirectly identifies the at least one of the valid virtual channel and the valid protocol (see e.g., page 5 lines 14-17), the valid virtual channel being a communication link (see e.g., page 2 line 9); and

a memory 224 accessible to the configuration manager 122, 222 and operable to store an identifier of the at least one of the valid virtual channel and the valid protocol based on a response to a probing configuration signal (see e.g., page 23 lines 30-34); and

wherein the configuration manager 122, 222 comprises a configurator 230 operable to initiate communication of the probing configuration signal over a virtual channel and toward a destination network element, to receive a response to the configuration signal, and to identify as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response, the virtual channel being a communication link (see e.g., page 22 lines 28-32); and

wherein the configurator 230 is operable to communicate over a virtual channel a packet comprising a plurality of probing configuration signals, each signal associated with a different protocol (see e.g., page 26 lines 16-20).

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#### Independent Claim 68

Referring to Figures 1, 2, and 3, independent claim 68 recites a method of providing automated assistance in configuring customer premises equipment 20, 120, 220, comprising:  
communicating over a virtual channel and toward a destination network element a probing configuration signal, the virtual channel being a communication link, the probing signal operable to identify at least one of a valid virtual channel and a valid protocol (see e.g., page 5 lines 14-17) without retrieving an identification of the at least one of the valid virtual channel and the valid protocol from a memory storing that information (see e.g., page 5 lines 15-17), the valid virtual channel being a communication link;

receiving over the virtual channel a response to the configuration signal (see e.g., page 4 line 33 – page 5 line 3); and

identifying as valid for configuration the at least one of the virtual channel and the valid protocol associated with the response (see e.g., page 17 lines 17-20);

wherein communicating the probing configuration signal comprises communicating the probing configuration signal over a plurality of virtual channels approximately simultaneously (see e.g., page 26 lines 31-34).

#### Dependent Claim 69

Referring to Figure 2 dependent claim 59 recites the method of Claim 68, wherein the probing configuration signal 112 comprises a signal selected from the group consisting of an F5 Operations, Administration, and Maintenance loopback signal 312 (see e.g., page 12 lines 27-29), a Dynamic Host Configuration Protocol request 316 (see e.g., page 13 line 3), a Link Control Protocol Configuration Packet 318, or a Point-to-Point Over Ethernet (PPOE) PADI packet 314.

#### Dependent Claim 71

Referring to Figure 4a, dependent claim 71 recites the method of Claim 68, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises:

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spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel (see e.g., page 25 lines 5-7);

communicating a probing configuration signal over a plurality of virtual channels (see e.g., page 26 lines 31-34); and

monitoring the probing configuration signal associated with each virtual channel using a separate thread (see e.g., page 5 line 32 – page 6 line 2).

#### Dependent Claim 72

Referring to Figure 4a, dependent claim 72 recites the method of Claim 68, wherein communicating a plurality of probing configuration signals 310 approximately simultaneously comprises communicating a plurality of probing signals 310 approximately back-to-back over at least one virtual channel (see e.g., page 6 lines 9-14).

#### Dependent Claim 73

Referring to Figure 2, dependent claim 73 recites the method of Claim 68, wherein communicating the probing configuration signal 112 comprises:

communicating the signal 112 over a first virtual channel (see e.g., page 15 lines 32-34);  
and

communicating the signal 112 over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires (see e.g., page 26 line 29 - page 27 line 5).

#### Dependent Claim 74

Referring to Figure 2, dependent claim 74 recites the method of Claim 68, wherein communicating the probing configuration signal 112 comprises:

communicating a first probing communication signal 112 over a virtual channel (see e.g., page 15 lines 32-34); and

communicating a second probing configuration signal 112 over the same virtual channel before a time out value associated with the first probing configuration signal expires (see e.g., page 26 lines 1-4).

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Dependent Claim 75

Referring to Figures 1, 2, and 3, dependent claim 75 recites the method of Claim 68, further comprising:

displaying the at least one of the valid virtual channel and the valid protocol to a user (see e.g., page 5 lines 21-24);

receiving the user's selection of the at least one of the valid virtual channel and the valid protocol (see e.g., page 5 lines 21-24); and

configuring the customer premises equipment 20, 120, 220 for operation using the selected at least one of the valid virtual channel and the valid protocol (see e.g. page 5 lines 21-24).

Dependent Claim 76

Referring to Figures 1, 2, and 3, dependent claim cites the method of Claim 68, further comprising automatically configuring the customer premises equipment 20, 120, 220 for operation using the at least one of the valid virtual channel and the valid protocol (see e.g., page 4 lines 10-17).

Dependent Claim 77

Referring to Figure 2, dependent claim 78 recites the method of Claim 68, further comprising:

communicating a diagnostic signal toward a destination network element (see e.g., page 21 lines 19-33); and

determining connectivity of a network layer based on whether a response to the diagnostic signal is received (see e.g., page 25 lines 23-39).

Dependent Claim 78

Referring to Figures 2 and 4b, dependent claim 78 recites the method of Claim 77, wherein the diagnostic signal 114, 116, 188 comprises a signal selected from the group consisting of a Protocol Internet Groper ("PING") signal 322, a domain name server resolution



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request signal 324, and a Hypertext Transmission Protocol request signal 326 (see e.g., page 25 lines 19-22).

Dependent Claim 79

Referring to Figure 2, dependent claim 79 recites the method of Claim 77, further comprising reporting on the connectivity of a network layer based on whether a response to the diagnostic signal 114, 116, 118 is received (see e.g., page 25 lines 23-29).

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09/712,017Grounds for Rejection to be Reviewed

Whether claims 5, 7, 11-14, 16, 18, 21, 25, 26, 31, 33, 35-39, 41, 61, 68, 72-77, and 79 are unpatentable under 35 U.S.C § 102 as being anticipated by Romohr (USPN 5, 596, 723), whether claims 6, 8-10, 22-24, 32, 69, and 78 are unpatentable under 35 U.S.C § 103 as being obvious over Romohr in view of what would have been obvious to one skilled in the art, and whether claims 17, 40, and 71 are unpatentable under 35 U.S.C § 103 as being obvious over Romohr in view of Marullo et al. (USPN 6,185,701).

Particularly, if Romohr teaches or suggests automatically identifying a valid virtual channel, without prompting a user for ...the valid virtual channel, and without retrieving the valid protocol from a memory; and if Marullo teaches or suggests each thread operable to process signals associated with a virtual channel.

Appellants' ArgumentA. Applicants' Invention

Customer Premises Equipment (CPE) is equipment that resides at a customers premises, for example, a computer or a modem. Many CPEs communicate to other devices via a network. A network may include a data network, a public switched telephone network (PSTN), an integrated services digital network (ISDN), or a service provider network. The device may be a network element, for example, a computer or a server. Depending on the type of network or combination of networks residing between the CPE and the network element, the communication between the CPE and the network element may use a variety of protocols and paths, the protocol defining the format of the communication and a virtual channel used to define a signal connection.

In order to communicate via the network, a CPE must be configured with the protocols and virtual channels that are valid within the network. Past solutions to this configuration problem included having the CPE read a predefined "look-up" table; however, this quickly becomes outdated as new services providers emerge or existing service providers varied the virtual channel or protocols supported. The present invention provides a solution to this configuration problem.

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One aspect of the Applicants' invention involves sending a signal over a virtual channel to determine if a protocol is supported by the network on the virtual channel. Based on a response to the signal, a valid virtual channel and a valid protocol can be identified. Once the valid virtual channel and valid protocol are identified, the CPE can be configured to communicate signals formatted in accordance to the valid protocol over the valid virtual channel. The valid virtual channel is a signal connection used to communicate signals between the CPE and the network. This aspect of the Applicants' invention advantageously configures the CPE so that it can communicate over the network even if a new service provider has emerged or if the valid virtual channel or valid protocol has changed for an existing service provider.

Another aspect of the Applicants' invention involves configuring the CPE without prompting a user for the valid virtual channel and valid protocol. This aspect of the Applicants' invention is advantageous because a CPE user typically has limited knowledge of protocols or virtual channels.

Another aspect of the Applicants' invention involves creating a plurality of threads, each thread operable to process signals associated with a virtual channel. Each thread communicates the signal towards the network. Then, the thread waits for a response that can identify the valid virtual channel and valid protocol.

Yet another aspect of the Applicants' invention involves configuring the CPE without retrieving an identification of the valid virtual channel from a memory storing that information. This aspect of the Applicant's invention is advantageous because it allows identification without using a "look-up" table which tends to become obsolete.

## B. The Cited Art

### a) Romohr

Romohr teaches automatically configuring a CPE according to a most prevalent network operating system and data frame type used on the network (see e.g., col. 5 lines 51-54). In Romohr, the user selects an "automatic network configuration" option via a setup program (see e.g., col. 9 lines 34-45). This selection causes the setup program to read a configuration table containing the frame types that are appropriate for a network interface card that is installed in the CPE. (see e.g., col. 9 lines 53-56). Next, a signal that is created from the frame type information

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is broadcasted to the network (see e.g., col. 10 lines 28-31). Then, the responses to the signal are tallied by the setup program and the most prevalent network operating system and frame type are identified by the setup program (see e.g., col. 10 lines 30-43). The setup program then considers the prevalent network operating system and frame type to be the most frequently used network operating system and frame type (see e.g., col. 10 lines 26-28.). Next, the prevalent information is displayed to the user and the user may choose to accept this configuration (see e.g., col. 11 lines 44-55). Upon acceptance, a configuration file on the CPE is modified so that the prevalent network operating system software and frame type is loaded at power up of the CPE (see e.g., col. 11 line - col. 12 line 18). Thus by Romohr's method, the CPE is configured with a prevalent frame type and a prevalent network operating system.

In further detail, Romohr teaches that a network operating system is a family of programs (see e.g., col. 3 lines 28-29). When these programs execute on a file server, the programs provide the server with the ability to share files with other devices across the network (see e.g., col 3 lines 38-40). When these programs execute on a client computer, the programs provide the computer with the ability to act as a client so that it can use shared resources, i.e., request files from the file server and send print jobs to other server computers. (see e.g., col 3 lines 49-53).

a) Marullo

Marullo teaches a method for testing a complex web site, e.g. sites providing hot links, web page nesting, data posting, and data downloading, under heavy load conditions (see e.g., col. 1 lines 1-30 and col. 5 lines 16-19). According to Marullos' testing method, HTML pages associated with the web site are obtained from a web server in order to extract links from the HTML pages (see e.g. col 5 lines 8-12). Then, the extracted links are sorted in various orders to test the web site (see e.g., col. 5 lines 8-22). Next, threads representing a virtual browser are spawned to simulate multiple users accessing the server simultaneously thus heavily accessing the web site. (see e.g., col. 21 lines 12-40). Each virtual browser can download and post data to the server at a rapid rate. (see e.g., col. 21 lines 12-40). Thus, Marullos' testing method teaches using a virtual browser to provide a heavy load condition for testing.

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C. Section 102 Rejection of Independent Claims 5, 21, 31, 61, and 68

The Examiner states that independent claims 5, 21, 31, 61, 68 are unpatentable under 35 U.S.C § 102 as being anticipated by Romohr. Applicants respectfully disagree.

The Examiner asserts that "Romohr teaches identifying a valid virtual channel." The Examiner apparently equates Romohr's network operating system to the claimed virtual channel.

As previously mentioned in the preceding "Applicant's Invention" section, Applicant teaches that a virtual channel is a signal connection used to communicate signals between the CPE and the network (see e.g., page 2 line 9 and page 4 line 31-33). In contrast, Romohr explains that a network operating system is a family of programs executed on the CPE. Thus, Romohr's network operating system cannot be the claimed virtual channel.

D. Section 102 Rejection of Independent Claims 5 and 61

The Examiner states that independent claims 5 and 61 are unpatentable under 35 U.S.C § 102 as being anticipated by Romohr. Applicants respectfully disagree.

The Examiner asserts that "Romohr teaches configuring the CPE without prompting a user for the valid virtual channel." The Examiner apparently equates Romohr's prompting a user for the prevalent network operating system" to the claimed without prompting user for the valid virtual channel".

First, prompting and without prompting are clear opposites of each other and mutually exclusive. Secondly, as previously presented, a virtual channel is not a network operating system. Thus, Romohr's prompting a user for the prevalent network operating system cannot be the claimed without prompting user for the valid virtual channel.

E. Section 102 Rejection of Independent Claim 68

The Examiner states that independent claim 68 is unpatentable under 35 U.S.C § 102 as being anticipated by Romohr. Applicants respectfully disagree.

The Examiner asserts that "Romohr teaches configuring the CPE without retrieving ... the valid virtual protocol from a memory". The Examiner apparently equates Romohr's reading a configuration table containing the frame types as the claimed without retrieving the valid virtual protocol from a memory.

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Reading and not reading are clear opposites of each other and mutually exclusive. Thus, Romohr's reading cannot be the claimed without reading.

F. Section 103 Rejection of Dependent Claims 17, 40, 71

The Examiner states that dependent claims 17, 40, and 71 are unpatentable under 35 U.S.C § 103(a) as being obvious over Romohr in view of Marullo. Applicants respectfully disagree.

The Examiner asserts that Romohr teaches the claimed invention except that "Marullo teaches asserts spawning a plurality of threads, each thread operable to process signals associated with the virtual channel. The Examiner apparently equates Marullos' browser to the claimed virtual channel.

As previously mentioned in the preceding "Applicant's Invention" section, Applicant's specification teaches that a virtual channel is a signal connection used to communicate signals between the CPE and the network. In contrast, as recognized by those skilled in the art, a browser is used to navigate in a web site. Thus, Marullos' browser cannot be the claimed virtual channel and it would not be obvious for one skilled in the art to used Marullos' browser thread for a completely unrelated virtual channel thread.

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G. Conclusion

For the foregoing reasons, Applicants respectfully submit that the rejections set forth in the final Office Action are inapplicable to the pending claims. The honorable Board is therefore respectfully requested to reverse the final rejection of the Examiner and the remand the application to the Examiner with instructions to allow the pending claims. Please grant any extensions of time required to enter this paper. Please charge any appropriate fees due in connection with this paper or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated: 4/14/06

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Claims Appendix

1-4. (Cancelled)

5. (Previously Presented) A method of providing automated assistance in configuring customer premises equipment for communication with another network element, comprising:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment without prompting a user for information that directly or indirectly identifies the at least one of the valid virtual channel and the valid protocol, the valid virtual channel being a communications link; and

assisting the user in configuring the customer premises equipment for use with the identified at least one of the valid virtual channel and the valid protocol;

wherein automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment comprises:

communicating over a virtual channel and toward a destination network element a probing configuration signal, the virtual channel being a communication link;

receiving over the virtual channel a response to the configuration signal; and

identifying as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response;

wherein communicating the probing configuration signal comprises communicating a plurality of probing configuration signals, each signal associated with a different one of the at least one of the valid virtual channel and the valid protocol.

6. (Original) The method of Claim 5, wherein the probing configuration signal comprises an F5 Operations, Administration, and Maintenance loopback signal.

7. (Original) The method of Claim 5, wherein the probing configuration signal comprises a signal having a self configuring protocol.



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8. (Original) The method of Claim 7, wherein the probing configuration signal comprises a Dynamic Host Configuration Protocol request, a Link Control Protocol Configuration Packet, or a Point-to-Point Over Ethernet (PPOE) PADI packet.

9. (Previously Presented) The method of Claim 8, wherein the valid protocol comprises an Internet over ATM protocol.

10. (Previously Presented) The method of Claim 8, wherein the valid protocol comprises a Point-to-Point over Asynchronous Transfer Mode protocol or a Point-to-Point over Ethernet protocol.

11. (Original) The method of Claim 5, wherein communicating the probing configuration signal comprises communicating the probing configuration signal over a plurality of virtual channels.

12. (Original) The method of Claim 11, wherein communicating the probing configuration signal over a plurality of virtual channels comprises communicating the signal over a first plurality of virtual channels that are likely to return a response.

13. (Original) The method of Claim 5, wherein communicating the probing configuration signal comprises:

communicating the signal over a first virtual channel; and  
communicating the signal over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires.

14. (Original) The method of Claim 5, wherein communicating the probing configuration signal comprises:

communicating a first probing communication signal over a virtual channel; and  
communicating a second probing configuration signal over the same virtual channel before a time out value associated with the first probing configuration signal expires.

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15. (Cancelled)

16. (Original) The method of Claim 5, wherein communicating the probing configuration signal comprises communicating a plurality of probing configuration signals approximately simultaneously.

17. (Original) The method of Claim 16, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises:

spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel;

communicating a probing configuration signal over a plurality of virtual channels; and

monitoring the probing configuration signal associated with each virtual channel using a separate thread.

18. (Original) The method of Claim 16, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises communicating a plurality of probing signals approximately back-to-back over at least one virtual channel.

19-20. (Cancelled)

21. (Previously Presented) A method of providing automated assistance in configuring customer premises equipment for communication with another network element, comprising:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment by communicating a first diagnostic signal associated with a first of a plurality of valid virtual channels and the valid protocols toward a destination network element, the valid virtual channel being a communication link; and

determining connectivity of a network layer based on whether a response to the diagnostic signal is received; and

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when a response is not received, communicating a second diagnostic signal associated with a second of the plurality of virtual channels and protocols, the virtual channel being a communication link.

22. (Original) The method of Claim 21, wherein the diagnostic signal comprises a Protocol Internet Groper ("PING") signal operable to test an Internet Protocol layer of the network.

23. (Previously Presented) The method of Claim 21, wherein the diagnostic signal comprises a domain name server resolution request signal operable to test a Transmission Protocol layer of the network, the Transmission Protocol layer is a Transmission Control Protocol.

24. (Original) The method of Claim 21, wherein the diagnostic signal comprises a Hypertext Transmission Protocol request signal operable to test an Application layer of the network.

25. (Original) The method of Claim 21, further comprising reporting on the connectivity of a network layer based on whether a response to the diagnostic signal is received.

26. (Previously Presented) The method of Claim 21, wherein the customer premises equipment comprises a modem.

27-30. (Cancelled)

31. (Previously Presented) A computer readable medium operable to execute the following steps on a processor of a computer:

automatically identifying at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment by  
communicating over a plurality of virtual channels and toward a destination network element a probing configuration signal, the virtual channel being a communication link;

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receiving over a valid virtual channel a response to the configuration signal, the valid virtual channel being a communication link; and  
identifying as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response.

32. (Original) The computer readable medium of Claim 31, wherein the probing configuration signal comprises an F5 Operations, Administration, and Maintenance loopback signal.

33. (Original) The computer readable medium of Claim 31, wherein the probing configuration signal comprises a signal having a self configuring protocol.

34. (Cancelled)

35. (Original) The computer readable medium of Claim 31, wherein communicating the probing configuration signal over a plurality of virtual channels comprises communicating the signal over plurality of virtual channels likely to return a response.

36. (Original) The computer readable medium of Claim 31, wherein communicating the probing configuration signal comprises:  
communicating the signal over a first virtual channel; and  
communicating the signal over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires.

37. (Original) The computer readable medium of Claim 31, wherein communicating the probing configuration signal comprises:  
communicating a first probing communication signal over a virtual channel; and  
communicating a second probing configuration signal over the same virtual channel before a time out value associated with the first probing configuration signal expires.

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38. (Original) The computer readable medium of Claim 31, wherein communicating the probing configuration signal comprises communicating over a virtual channel a plurality of probing configuration signals, each signal associated with a different protocol.

39. (Original) The computer readable medium of Claim 31, wherein communicating the probing configuration signal comprises communicating a plurality of probing configuration signals approximately simultaneously.

40. (Original) The computer readable medium of Claim 39, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises:

    spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel;  
    communicating a probing configuration signal over a plurality of virtual channels; and  
    monitoring the probing configuration signal associated with each virtual channel using a separate thread.

41. (Original) The computer readable medium of Claim 39, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises communicating a plurality of probing signals approximately back-to-back over at least one virtual channel.

42.-60. (Cancelled)

61. (Previously Presented) An apparatus operable to provide automated assistance in configuring customer premises equipment, the apparatus comprising:

    a configuration manager operable to automatically identify at least one of a valid virtual channel and a valid protocol for configuration with the customer premises equipment without prompting a user for information that directly or indirectly identifies the at least one of the valid virtual channel and the valid protocol, the valid virtual channel being a communication link; and

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a memory accessible to the configuration manager and operable to store an identifier of the at least one of the valid virtual channel and the valid protocol based on a response to a probing configuration signal; and

wherein the configuration manager comprises a configurator operable to initiate communication of the probing configuration signal over a virtual channel and toward a destination network element, to receive a response to the configuration signal, and to identify as valid for configuration the at least one of the valid virtual channel and the valid protocol associated with the response, the virtual channel being a communication link; and

wherein the configurator is operable to communicate over a virtual channel a packet comprising a plurality of probing configuration signals, each signal associated with a different protocol.

62.-67. (Cancelled)

68. (Previously Presented) A method of providing automated assistance in configuring customer premises equipment, comprising:

communicating over a virtual channel and toward a destination network element a probing configuration signal, the virtual channel being a communication link, the probing signal operable to identify at least one of a valid virtual channel and a valid protocol without retrieving an identification of the at least one of the valid virtual channel and the valid protocol from a memory storing that information, the valid virtual channel being a communication link;

receiving over the virtual channel a response to the configuration signal; and

identifying as valid for configuration the at least one of the virtual channel and the valid protocol associated with the response;

wherein communicating the probing configuration signal comprises communicating the probing configuration signal over a plurality of virtual channels approximately simultaneously.

69. (Original) The method of Claim 68, wherein the probing configuration signal comprises a signal selected from the group consisting of an F5 Operations, Administration, and Maintenance loopback signal, a Dynamic Host Configuration Protocol request, a Link Control Protocol Configuration Packet, or a Point-to-Point Over Ethernet (PPOE) PADI packet.

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70. (Cancelled)

71. (Previously Presented) The method of Claim 68, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises:  
    spawning a plurality of threads, each thread operable to process signals associated with at least one virtual channel;  
    communicating a probing configuration signal over a plurality of virtual channels; and  
    monitoring the probing configuration signal associated with each virtual channel using a separate thread.

72. (Previously Presented) The method of Claim 68, wherein communicating a plurality of probing configuration signals approximately simultaneously comprises communicating a plurality of probing signals approximately back-to-back over at least one virtual channel.

73. (Original) The method of Claim 68, wherein communicating the probing configuration signal comprises:  
    communicating the signal over a first virtual channel; and  
    communicating the signal over a second virtual channel before a time out value associated with the signal communicated over the first virtual channels expires.

74. (Original) The method of Claim 68, wherein communicating the probing configuration signal comprises:  
    communicating a first probing communication signal over a virtual channel; and  
    communicating a second probing configuration signal over the same virtual channel before a time out value associated with the first probing configuration signal expires.

75. (Previously Presented) The method of Claim 68, further comprising:  
    displaying the at least one of the valid virtual channel and the valid protocol to a user;

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receiving the user's selection of the at least one of the valid virtual channel and the valid protocol; and

configuring the customer premises equipment for operation using the selected at least one of the valid virtual channel and the valid protocol.

76. (Previously Presented) The method of Claim 68, further comprising automatically configuring the customer premises equipment for operation using the at least one of the valid virtual channel and the valid protocol.

77. (Original) The method of Claim 68, further comprising:  
communicating a diagnostic signal toward a destination network element; and  
determining connectivity of a network layer based on whether a response to the diagnostic signal is received.

78. (Original) The method of Claim 77, wherein the diagnostic signal comprises a signal selected from the group consisting of a Protocol Internet Groper ("PING") signal, a domain name server resolution request signal, and a Hypertext Transmission Protocol request signal.

79. (Original) The method of Claim 77, further comprising reporting on the connectivity of a network layer based on whether a response to the diagnostic signal is received.

80.-82. (Cancelled)



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Evidence Appendix

None

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